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New records and distributional notes for the Neotropical genus *Isotes* Weise, 1922 (Insecta, Coleoptera, Chrysomelidae, Galerucinae)

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Abstract: New records are provided for thirteen species of *Isotes* Weise, 1922: *I. atriventris* (Jacoby, 1880), *I. bertonii* (Bowditch, 1912), *I. borrei* (Baly, 1889), *I. brasiliensis* (Jacoby, 1888), *I. cribrata* (Gahan, 1891), *I. dilatata* (Jacoby, 1887), *I. figurata* (Jacoby, 1887), *I. multipunctata* (Jacoby, 1878), *I. puella* (Baly, 1886), *I. sanguineipennis* (Baly, 1891), *I. uniformis* (Jacoby, 1887), *I. varipes* (Boheman, 1859), and *I. vittula* (Bowditch, 1911). Updates in relation to the latest catalogue are presented for nine species, and new information at state, province, or region level is provided for 35 species.

Key words: Luperini; Diabroticites; *Synbrotica*

Chrysomelidae Latreille, 1802 comprises 2,560 genera and 38,000 species distributed worldwide (Seeno and Wilcox 1982; Costa 2000; Riley et al. 2002). It currently includes 11 subfamilies, among which Galerucinae Latreille, 1802 is the largest, comprising 1,048 genera (Gillespie et al. 2008) and between 13,000 and 15,000 described species (Riley et al. 2002).

A large number of species have economic importance due to the direct consumption of cultivated plants or as vectors of pathogenic bacteria and fungi (Riley et al. 2002), and the section Diabroticites (Luperini) includes known pest species (Smith and Lawrence 1967).

Isotes Weise, 1922 is allocated in Diabroticites with 16 other genera, and comprises 179 described species (Bechyné and Bechyné 1969; Wilcox 1972, 1975; Moura 2003). Although very diverse, the biology of its representatives remains unknown.

The genus has a Neotropical distribution, with species recorded from North, Central, and South America. Most of these records were cited in faunistic papers by Jan Bechyné (1955, 1956a, 1956b, 1958a, 1958b), with some co-authored by Bohumila Bechyné (1961a, 1961b, 1962, 1969, 1970), who described together more than 60 species of the genus. Records published prio to the Bechynés' studies are limited to the original descriptions of each species. Wilcox (1972, 1975) cataloged records of all species, but distributional information was limited to country level.

Representatives of 35 species have been obtained through exchange or loan from the following institutions: Coleção Entomológica do Instituto Oswaldo Cruz, Fundação Oswaldo Cruz, Rio de Janeiro (CEIOC); Coleção Entomológica Professor José Alfredo Pinheiro Dutra, Universidade Federal do Rio de Janeiro, Rio de Janeiro (DZRJ); Essig Museum of Entomology, University of California, Berkeley (EMEC); Museu Anchieta, Colégio Anchieta, Porto Alegre (MAPA); Museu de Ciências Naturais, Fundação Zoobotânica do Rio Grande do Sul, Porto Alegre (MCZN); Museu Nacional, Universidade Federal do Rio de Janeiro, Rio de Janeiro (MNRJ); Museu de Zoologia, Universidade de São Paulo, São Paulo (MZSP), National Museum of Natural History, Smithsonian Institution, Washington, D.C. (USNM); and Museum für Naturkunde der Humboldt–Universität, Berlin (ZMHB). The examination of obtained material has led to an increase of the distributional data for 13 species from Mexico, Guatemala, Nicaragua, Costa Rica, Panama, Colombia, Brazil, and Bolivia, which are provided below. Additionally, corrections to Wilcox's catalogues (1972, 1975) are also made.

Species are arranged alphabetically with diagnoses and figures. Labels of type material are separated by "/" when cited. Additional geographical distribution information was obtained from the literature concerning each species and the catalogues of Blackwelder (1946)

and Wilcox (1972, 1975). The distribution is included in a density map by countries (Figure 41) and detailed in Table 1.

Isotes atriventris (Jacoby, 1880) (Figure 1)

Diagnosis: integument light brown, except antennomeres II–XI, tibiae, tarsi, abdomen and posterior half of elytra black; frons longer than wide, clypeus with six setae near the basal margin, elongated genal area, eyes small, with one long and two short setae at the inner margin; pronotum 1.6–1.7 times wider than long, with a transverse depression in the posterior half (closer to the posterior margin), reaching the sides, where it is evidently deeper.

Material examined: COLOMBIA [Columb.], 1 female, without other data (ZMHB).

New record: Colombia.

Distribution: Colombia, Ecuador.

Isotes alcyone (Baly, 1889) (Figure 2)

Diagnosis: integument light brown, except antennae, two elytral spots (covering almost the entire disc, with transversal light stripe at median region), apical two-thirds of femora, tibiae and tarsi black; frons longer than wide, clypeus with six setae near the basal margin, elongated genal area, eyes small; pronotum 1.6–1.7 times wider than long, with a transverse depression in the posterior half (closer to the posterior margin), reaching the sides, where it is evidently deeper.

Material examined: BRAZIL, *Amazonas*: Benjamin Constant, Rio Javary, 1, X-1960, (*Dirings*) (MZSP).

Distribution: Brazil (Amazonas).

Isotes antonia (Bechyné, 1956) (Figure 3)

Diagnosis: integument light brown, except antennae, metasternum, metepisternum, abdomen, metafemora, tibiae, tarsi, scutellum and elytra dark-brown to black,

Table 1. Distributional records of the 35 species of *Isotes*. [*, new record or distribution update of Country; **, new record of state, province or region; see text for details].

Species	Mexico	Guatemala	Belize	Nicaragua	Costa Rica	Panama	Venezuela	Colombia	Brazil	Ecuador	Peru	Bolivia	Paraguay	Argentina
Isotes atriventris								x*		x				
I. alcyone									x					
I. antonia									x					
I. bertonii									x**				x	x
I. bicincta											x	x*		
I. borrei									x**					
I. brasiliensis									x**					
I. cargona											x**			
I. caryocara											x	x		
I. cinctella									x					
I. complicata	x													
I. cribrata									x**					
I. crucigera									x				x	
I. delicula											x	x*		
I. digna									x					
I. dilatata	x	x*		x**	x*	x								
I. donata									x				x	
I. eruptiva									x					
I. figurata		x		x*	x**									
I. imbuta											x	x		
I. mexicana	x	x*			x*									
I. multipunctata	x**													
I. pollina									x					
I. puella				x	x**	x*	x	x						
I. rubripennis											x			
I. sanguineipennis											x	x*		
I. semiflava									x					x
I. spilothorax									x					
I. taeniolata									x*		x			
I. ternata									x					
I. tetraspilota	x	x*	x*	x	x*									
I. uniformis				x	x**	x								
I. valentina									x					
I. varipes								x*	x**					
I. vittula		x**									x			

Figures 1–14. 1: *Isotes atriventris* (Jacoby). **2**: *I. alcyone* (Baly). **3**: *I. antonia* (Bechyné). **4**: *I. bertonii* (Bowditch). **5:** *I. bicincta* (Bowditch). **6** and **7**: *I. borrei* (Baly). **8**: *I. brasiliensis* (Jacoby). **9**: *I. cargona* (Bechyné). **10** and **11:** *I. caryocara* (Bechyné). **12**: *I. cinctella* (Chevrolat). **13**: *I. complicata* (Jacoby). **14:** *I. cribrata* (Gahan). Scale bars = 1 mm.

with metallic blue or viollaceous; frons as wide as long, clypeus with six setae near the basal margin, elongated genal area, eyes small, with a long seta at the inner margin; pronotum 1.4–1.6 times wider than long, with a transverse depression in the posterior half (closer to the posterior margin), reaching the sides, where it is evidently deeper.

Material examined: Brazil, *Rio Grande do Sul*: Vila Oliva, 1 female, I-1937; 1 female, 18-II-1951; 1 female, 12-II-1952; 3 females, 18–20-II-1952; 1 female, 15-II-1954, (*Pe P. Buck*) (MAPA).

Distribution: Brazil (Espírito Santo, São Paulo, Rio de Janeiro, Santa Catarina, Rio Grande do Sul).

Isotes bertonii (Bowditch, 1912) (Figure 4)

Diagnosis: integument light brown, except antenna, head and pronotum reddish-brown; antennomeres I–VII and X–XI, scutellum, elytral spots (one at proximal ¼, and other larger at distal half, not reaching humeri, sutures and elytral margins), sternites and urosternites, tibiae and tarsi dark-brown to black; frons as wide as long, clypeus with six setae near the basal margin, elongated genal area, eyes small, with a long seta at the inner margin; pronotum almost 2.0 times wider than long, with a transverse depression in the posterior half (closer to the posterior margin), reaching the sides, where it is evidently deeper.

Material examined: Brazil, *Goiás*: Anápolis, 1 male, (*P. S. Ribeiro*) (MZSP); Goiânia, 2 males, VIII-1943, (*Freitas and Nobre*) (CEIOC); *Distrito Federal*: Brasília, 1 female, VII-1960, (*Exp. Formosa*) (MNRJ); *São Paulo*: 1 male, I-1918 (MZSP); Guatapará, 1 male, I-1945, (*M. Carrera*) (MZSP); Presidente Epitácio, 1 male, 05-X-1937, (*H. Zellibor*) (MNRJ); Ilha Seca, 1 male, 19–26-II-1940, (*Com. Inst. Fiocruz*) (CEIOC); *Paraná*: Paracaí, 1 male, II-1954 (MZSP).

New records: Distrito Federal, São Paulo and Santa Catarina (Brazil).

Distribution: Brazil (Goiás, Distrito Federal, São Paulo, Paraná), Paraguay (Alto Paraná; unknown department: Rio Monday, San Luis), Argentina.

Isotes bicincta (Bowditch, 1912) (Figure 5)

Diagnosis: integument light brown, except head, antennomeres IX–XI, two transversal stripes on elytra (proximal and distal thirds), metasternum, urosternites, tibiae and tarsi black; frons longer than wide, clypeus with six setae near the basal margin, elongated genal area; pronotum 1.8 times wider than long, with a transverse depression in the posterior half (closer to the posterior margin), reaching the sides, where it is evidently deeper.

Material examined: Bolivia, *Cochabamba*: Yungas del Palmar, 1000 m, IX-1955, (*Dirings*) (MZSP); *La Paz*: Sud Yungas, Chulumani, 1700 m, 1, II-1955, (*Dirings*) (MZSP).

Distribution update: Bolivia is confirmed after the single citation of Bechyné and Bechyné (1970).

Distribution: Peru (Cusco), Bolivia (La Paz, Cochabamba).

Isotes borrei (Baly, 1889) (Figures 6 and 7)

Diagnosis: integument dark brown to black, except antennae, prothorax, margins, transversal stripe before medial region, and ápex of each elytra with antennomeres VIII–X and basal two-thirds of XI, coxae and femora yellowish-brown; frons as wide as long, clypeus with six setae near the basal margin, elongated genal area, eyes small, with a long seta at the inner margin; pronotum almost 2.0 times wider than long, with a transverse depression in the posterior half (closer to the posterior margin), reaching the sides, where it is evidently deeper.

Material examined: Brazil, 1 male, without date, (*F.C. Bowditch*) [1st Jacoby Coll.] (USNM); *Rio de Janeiro*: Petrópolis, 1, 03-II-1952, (*H. Barth*) (CEIOC); Teresópolis, 1 female, XII-1925, (*Dirings*) (MZSP); Mangaratiba, 2 males, VIII-1938 – II-1939, (*R. C. Shannon*) (USNM); *Espírito Santo*: 1 female, without additional data [ex coll. Fruhstorfer] (ZMHB); Córrego Itá, 1 male, XI-1956, (*W. Zikán*) (MNRJ); Guandú, 3 females, X-1920, (*F. Hoffmann*) (MNRJ); *São Paulo*: Agantuba, 1 male, I-1922, (*Azevedo Marques*) (MNRJ); Santos, Ilha Santo Amaro, 1 female, 02-IV-1912, (*G.E. Bryant*) (USNM); *Minas Gerais*: 1, VII-1925, (*Loreto Moreira*) (MNRJ); *Rio Grande do Sul*: São Leopoldo, 1 male and 1 female, (*F. Schneider*) (ZMHB).

New records: Minas Gerais and Espírito Santo (Brazil).

Distribution: Brazil (Minas Gerais, Espírito Santo, São Paulo, Rio de Janeiro, Paraná, Santa Catarina).

Isotes brasiliensis (Jacoby, 1888) (Figure 8)

Diagnosis: integument dark brown with metallic green, except head, scapus, prothorax, mesosternum, mesepisternum, mesepimeron, coxae, femora, and ventral surface of protibiae, light brown; apex of mandibles, antennae, dorsal surface of protibiae, and tarsi dark brown; frons as wide as long, clypeus with six setae near the basal margin, elongated genal area, eyes small, with a long seta at the inner margin; pronotum 1.7 times wider than long, with a transverse depression in the posterior half (closer to the posterior margin), reaching the sides, where it is evidently deeper.

Material examined: Brazil, *Mato Grosso*: Rondonópolis, 1, XII-1950, (*Dirings*) (MZSP); *Rio de Janeiro*: Pau da Fome, 1 female, 04-VIII-1944, (*Newton Santos*) (MNRJ); represa do Rio Grande, 1 female, XII-1951, (*B. Pohl*) (MZSP); *São Paulo*: Guarujá, 1 female, 17-VII-1920, (*W. Melm.*) (MNRJ); Cantareira, 1 male, 02-VI-1938, (*Dr. Nick*) (MZSP); *Santa Catarina*: Joinville, 1 female, XII-1920 (MNRJ); 3 females and 1 male, IX-1956, (*Dirings*) (MZSP).

New record: Mato Grosso (Brazil).

Distribution: Brazil (Mato Grosso, Minas Gerais, Espírito Santo, São Paulo, Rio de Janeiro, Paraná, Santa Catarina, Rio Grande do Sul).

Isotes cargona (Bechyné, 1958) (Figure 9)

Diagnosis: integument light brown to reddish-brown, except antennoneres II–VIII, distal half of elytra, tibiae, tarsi and urosternites black; frons as wide as long, clypeus with six setae near the basal margin, elongated genal area, eyes large, with one long and two short setae at the inner margin; pronotum 1.6 times wider than long, with a transverse depression in the posterior half (closer to the posterior margin), reaching the sides, where it is evidently deeper.

Material examined: Peru, *Ucayali*: Coronel Portillo, Pucallpa, Rio Ucayali, 2 males, IX-1947, (*Dirings*) (MZSP).

Distribution: Peru (Ucayali, Huánuco)

Isotes caryocara (Bechyné, 1956) (Figures 10 and 11)

Diagnosis: integument light brown, except antennae, scutellum, elytral disc, tibiae and tarsi black some specimens with vertex, disc of pronotum, metasternum and urosternites black; frons longer than wide, elongated genal area, eyes large, with a long seta at the inner margin; pronotum 1.4 times wider than long, with a transverse depression in the posterior half (closer to the posterior margin), reaching the sides, where it is evidently deeper; males with tibiae thickened in the middle.

Material examined: Bolivia, *La Paz*: Nor Yungas, Coroico, 1 female, XII-1955, (*Dirings*) (MZSP); *Cochabamba*: Cristalmayu, 1, XI-1948, (*Dirings*) (MZSP).

Distribution: Peru (Huánuco, Junín, Cusco, Puno, Arequipa), Bolivia (La Paz, Cochabamba).

Isotes cinctella (Chevrolat, 1884) (Figure 12)

Diagnosis: integument light brown, except antennae, elytral disc, metasternum, metepisternum, apex of femora, tibiae and urosternites black; frons longer than wide, clypeus with six setae near the basal margin, short genal area, eyes large, with a long seta at the inner margin; pronotum 1.5 times wider than long, with a transverse depression in the posterior half (closer to the posterior margin), reaching the sides, where it is evidently deeper.

Material examined: Brazil, *Rio de Janeiro*: 1 male, 21-XI-1932, (*Dario Mendes*) (MNRJ); Pau da Fome, 1 male, 28-VII-1944 (MNRJ); Floresta da Tijuca, Mayrink, 1 male, 24-VIII-1944, (*Newton Santos*) (MNRJ); Morro Cocanha, 1, (*Rodrigues, J.M.S.*) (DZRJ); *São Paulo*: Piaçaguera, 1, 09-III-1907; 1, I-1908, (*Luderwaldt*) (MZSP); *Rio Grande do Sul*: Vila Oliva, 1 male, 12-II-1948; 1 female, 05-II-1952, (*P. Buck & S. J.*) (MAPA).

Distribution: Brazil (Bahia, Espírito Santo, São Paulo, Rio de Janeiro, Paraná, Santa Catarina, Rio Grande do Sul).

Isotes complicata (Jacoby, 1887) (Figure 13)

Diagnosis: integument light-brown; except head, pronotal spots, scutellum, two longitudinal and one transversal spot on base of elytra, sternites, urosternites, and spots at basal femora dark brown; frons wider than long, short genal area, eyes small, with a long seta at the inner margin; pronotum 1.6–1.7 times wider than long, with two smooth oval depressions in the middle.

Material examined: Mexico, *Veracruz*: Jalapa, 1 male, without date, (*W. Schaus*) (EMEC).

Distribution: Mexico (Veracruz).

Isotes cribrata (Gahan, 1891) (Figure 14)

Diagnosis: integument light brown, except antennomeres II–XI, tibiae and tarsi black; elytra metallic green or blue; frons wider than long, elongated genal area, pronotum 1.6 times wider than long.

Material examined: Brazil, *Santa Catarina*: Timbó, 1 female, XII-1931, (*Dirings*) (MZSP).

New record: Santa Catarina (Brazil).

Distribution: Brazil (Rio de Janeiro, Santa Catarina).

Isotes crucigera (Weise, 1916) (Figure 15)

Diagnosis: integument yellowish-brown, except head, scapus, antennomeres II–VII, apex of XI, scutellum, sternites (except prosternum), tibiae, tarsi and urosternites dark brow to black; frons as wide as long, clypeus with six setae near the basal margin, elongated genal area, eyes small, with a long seta at the inner margin; pronotum almost 2.0 times wider than long, with a transverse depression in the posterior half (closer to the posterior margin), reaching the sides, where it is evidently deeper.

Material examined: Brazil, *Minas Gerais*: Conceição da Paraíba, Fazenda S. José, 1 female, 01-XI-1960, (*Carvalho*) (MNRJ); *Rio de Janeiro*: Parque Nacional da Bocaina, Estrada Paraty-Cunha, 3 females, 24-I-2010, (*Mattos & Mermudes*) (DZRJ); Petrópolis, Morro Castelo, 1, 08-VI-1991, (*Serpa-Filho, A.*) (CEIOC); *São Paulo*: 1 female, III-1958, (*Dirings*) (MZSP); Bananal, Bocaina, 1 male, I-1937, (*D. Mendes*) (MNRJ); Barueri, 1 male, 15-III-1955, (*K. Lenko*) [Coleção Campos Seabra] (MNRJ); *Paraná*: Marumbi, 1 female, II-1944, (*Dirings*) (MZSP); *Santa Catarina*: Corupá, 1 male, I-1953, (*A. Maller*) [Coleção Campos Seabra] (MNRJ); Joinville, 1 male, XI-1956, (*Dirings*) (MZSP).

Distribution: Brazil (Minas Gerais, São Paulo, Rio de Janeiro, Paraná, Santa Catarina, Rio Grande do Sul), Paraguay (Central).

Isotes delicula (Erichson, 1847) (Figure 16)

Diagnosis: integument light brown, except vertex, antennae, tibiae and tarsi dark brown; elytral disc dark brown with five conspicouous light brown oval spots [1+2+1+1], the second confluent with lateral margin; frons as wide as long; elongated genal area, pronotum almost 2.0 times wider than long.

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Figures 15–28. 15: *Isotes crucigera* (Weise). **16:** *I. delicula* (Erichson). **17** and **18**: *I. digna* (Gahan). **19**: *I. dilatata* (Jacoby). **20**: *I. donata* (Bechyné). **21** and **22**: *I. eruptiva* (Bechyné). **23** and **24:** *I. figurata* (Jacoby). **25** and **26:** *I. imbuta* (Erichson). **27**: *I. mexicana* (Harold). **28**: *I. multipunctata* (Jacoby). Scale bars = 1 mm.

Material examined: Bolivia, *Yungas*: Chulumani, 1700 m, 1, XII-1955, (*Dirings*) (MZSP); *La Paz*: Yungas, Coroico, 1700m, 1, XII-1955, (*Dirings*) (MZSP).

Distribution update: Bolivia is confirmed after the single citation of Bechyné and Bechyné (1970).

Distribution: Peru (Huánuco, Junín), Bolivia (La Paz).

Isotes digna (Gahan, 1891) (Figures 17 and 18)

Diagnosis: integument yellowish-brown, except antennae, elytral disc, tibiae and tarsi black; frons as wide as long, clypeus with eight setae near the basal margin, elongated genal area, eyes small, with a long seta at the inner margin; pronotum 1.6 times wider than long, with a transverse depression in the posterior half (closer to the posterior margin), reaching the sides, where it is evidently deeper; elytra with apical excavation in males.

Material examined: Brazil, *Rio de Janeiro*: Sacra Família do Tinguá, without other data, 1 female (DZRJ); *São Paulo*: Amparo, 1 female, without additional data (MNRJ); Santana, 1 male, 1909, (*Garve*) (MZSP); Salesópolis, Estação Biológica Boracéia, 15–16-X-1983, (*Exc. DZUP*) (MZSP); Campos do Jordão, Eugene Lefreve, 1 female, 04–08-IX-1953, (*Pe. Pereira & Medeiros*) (MZSP).

Distribution: Brazil (São Paulo, Rio de Janeiro).

Isotes dilatata (Jacoby, 1887) (Figure 19)

Diagnosis: integument dark brown, except elytra yellowish-brown; frons as wide as long, clypeus with eight setae near the basal margin, short genal area, eyes small, with a long seta at the inner margin; males with longitudinal dorsal carina on antennomeres III–IX; pronotum almost 2.0 times wider than long, with a transverse depression in the posterior half (closer to the posterior margin), reaching the sides, where it is evidently deeper.

Material examined: Mexico, 2 males, without other data, J. Flohr leg. (ZMHB); *Veracruz*: South Lake Catemaco, 1 female, (*D. H. Janzen*) (EMEC); Motzorongo, 5 males and 2 females, without additional data (ZMHB); *Cordoba*: 1, 10-VI; 1, 30-XII, (*Fredk Knab*) (USNM); Fortin de las Flores, 1 female, 25-XII-1963; 1 male, 25-XII-1964; 1 female, 25-XII-1965; 1 male, 25-XII-1966, (*L. B. & C. W. O'Brien*); 1 female, 16-VIII-1962, (*P. D. Hurd*) (ZMHB); Fortin de las Flores, Sierra de Zongolica, 1 female (ZMHB); *Chiapas*: Amatán, 3 females (ZMHB); Guatemala, *Baja Verapaz*: Purullá [Purula], 1 female, (ZMHB); Sabo, 1 male, (*Champion*) (ZMHB); San Juan, 1, (*Champion*) (ZMHB); Nicaragua, *Matagalpa*: Selva Negra, 1, 15-IX-1994, Maes, Tellez, (*Hernandez & Brahant*) (USNM); Costa Rica, *San José*: Tecurrique [Tucurrique], 1, without date, (*Schild & Burgdorf*) (USNM); *Cartago*: Turialba, 3 females, without date, (*Heyne V.*) (ZMHB).

New records: Matagalpa (Nicaragua), San José and Cartago (Costa Rica).

Distribution update: Guatemala and Costa Rica are confirmed after citations by Blackwelder (1946).

Distribution: Mexico (Sonora, Veracruz, Chiapas), Guatemala (Alta Verapaz, Baja Verapaz), Nicaragua (Matagalpa), Costa Rica (San José, Cartago), Panama (Chiriquí).

Isotes donata (Bechyné, 1956) (Figure 20)

Diagnosis: integument dark brown to black, except head and pronotum reddish-brown, scutellum and elytra dark-blue, violaceous or dark-green; frons slightly wider than long, clypeus with six setae near the basal margin, elongated genal area, eyes small, with a long seta at the inner margin; pronotum 1.5 times wider than long, with a transverse depression in the posterior half (closer to the posterior margin), reaching the sides, where it is evidently deeper.

Material examined: Brazil, *São Paulo*: Campos do Jordão, Eugene Lefreve, 1, 04–08-IX-1953, (*Pe. Pereira & Medeiros*) (MZSP); *Rio Grande do Sul*: Pareci Novo, 2 females, IX-1932, (*F. R. Meyer leg./ Pe P. Buck*) (MAPA).

Distribution: Brazil (São Paulo, Paraná, Santa Catarina, Rio Grande do Sul), Paraguay (Itapúa).

Isotes eruptiva (Bechyné, 1955) (Figures 21 and 22)

Diagnosis: integument dark brown to black, except prothorax and elytra yellowish-brown; frons wider than long, clypeus with 14 setae near the basal margin, elongated genal area, eyes small, with two long setae at the inner margin; pronotum almost 2.0 times wider than long, with a transverse depression in the posterior half (closer to the posterior margin), reaching the sides, where it is evidently deeper; abdomen with apical excavation in males.

Material examined: Brazil, *Santa Catarina*: Rio Vermelho, 1 male, XI-1952; 1 female, XII-1957, (*Dirings*) (MZSP); Lages, 1 male and 1 female, without date, (Hochland *Fruhstorfer*) (ZMHB).

Type material: Paratype male examined and deposited in MZSP, with following labels: 1) "S. Paulo – Ypiranga/ Lange de Morretes Coll. 1936 [scratched]/ X.907/ Luderw" [beige, two first lines print in black, last two manuscript]; 2) "P-TYPE/ Diabrotica eruptiva m./ J. Bechyné det. 1955" [beige label, manuscript, last line print in black]; 3, "PARÁTIPO" [green label, print in black].

Distribution: Brazil (São Paulo, Santa Catarina, Rio Grande do Sul).

Isotes figurata (Jacoby, 1887) (Figures 23 and 24)

Diagnosis: integument yellowish-brown, except head, elytral spots, metasternum, and urosternites dark brown; some specimens have elytra black with margin and elytral suture yellowish-brown; frons slightly wider than long, clypeus with eight setae near the basal margin, short genal area, eyes small, with a long seta at

the inner margin, antennomere III subequal to IV-IX; pronotum 1.6–1.7 times wider than long, with two smooth oval depressions in the middle.

Material examined: Guatemala, *Escuintla*: 1 female, VIII-1998, (*Fredk Knab*) (USNM); Costa Rica, *San José*: Piedras Negras, 2 males, without date, (*Schild & Burgdorf*) (USNM).

New record: Costa Rica (San José).

Distribution update: Nicaragua is confirmed after the single citation of Bechyné (1962).

Distribution: Guatemala (El Progreso, Sololá, Escuintla), Nicaragua (Managua) and Costa Rica (San José).

Isotes imbuta (Erichson, 1847) (Figures 25 and 26)

Diagnosis: integument dark brown to black, except frons, clypeus, antennae, prothorax, proximal half of elytra, pro- and mesocoxae, and base of femora yellowish-brown; some specimens with circum-scutelar area dark brown; frons longer than wide, clypeus with eight setae near the basal margin, elongated genal area, eyes large, with a long seta at the inner margin; pronotum 1.6 times wider than long, with a transverse depression in the posterior half (closer to the posterior margin), reaching the sides, where it is evidently deeper.

Material examined: Peru, 1 male, without date, (*V. Tschudi*) (ZMHB).

Type material: Lectotype male examined, deposited in ZMHB, with the following labels: 1) "Peru V. Tschudi" [beige label, manuscript]; 2) "31068" [beige label, print in black]; 3) "Diabrotica imbuta Er." [beige label, manuscript]; 4) "LECTO/ Holo-Type [Holo scratched]/ SMITH 64" [red, manuscript, second line print in black].

Distribution: Peru (Junín), Bolivia (Cochabamba).

Isotes mexicana (Harold, 1875) (Figure 27)

Diagnosis: integument light brown, except head, antennae and pronotum brownish-orange; dorsal longitudinal stripe of antennomeres I–V, rounded pronotal spots, scutellum, seven oval elytral spots [2 + 3 + 2], sternites, tibiae, tarsi and urosternites dark brown to black; frons wider than long, clypeus with eight setae near the basal margin, short genal area, eyes small, with a long seta at the inner margin; pronotum 1.6–1.7 times wider than long, with two smooth oval depressions in the middle; males with first mesotarsomere with proximal projection, facing backwards, connecting with internal apical projection of mesotibiae.

Material examined: Mexico, *Oaxaca*: 1 female, 16-VII-1937, (*M. A. Embury*); 1 male, 15-VII-1939, (*Al Mcay*) (EMEC); *Veracruz*: Orizaba, 1 male, 09–16-1992, (*H. Osborn*) (USNM); Orquias from Tahcazunchata, SLP, 1 female, 03-II-1947, (*Laredo*) (USNM); *Morelos*: Cuernavaca, 1 female, VI-1955, (*N. L. H. Krauss*) (USNM); Guatemala, *El Quiché*: Nebaj, 1 male, 09-VIII-1947, (*F. Johnson/ Donor./ C & P Vaurie*) (EMEC).

Distribution update: Guatemala and Costa Rica are confirmed after records by Jacoby (1887) and Blackwelder (1946).

Distribution: Mexico (Veracruz, Morelos, Oaxaca, unknown state: Tlatingo, Cordova), Guatemala (Baja Verapaz, El Quiche, Quetzaltenango, Sololá, Sacatepéquez), Costa Rica.

Isotes multipunctata (Jacoby, 1878) (Figure 28)

Diagnosis: integument brownish-orange, except elitral disc, coxae and femora yellowish-brown; antennae, three pronotal spots, scutellum, nine oval elitral spots [1 + 1+ 3+ 2 + 2], sternites, tibiae, tarsi and urosternites dark brown to black; frons wider than long, clypeus with eight setae near the basal margin, short genal area, eyes small, with a long seta at the inner margin; pronotum 1.6–1.7 times wider than long, with two smooth oval depressions in the middle; males with first mesotarsomere with proximal projection, facing backwards, connecting with internal apical projection of mesotibiae.

Material examined: Mexico, 3 females and 1 male, without date, (*Hoege*); 2 females and 3 males, without date, (*Deppe*); 2 females, without date, (*J. Flohr*) (ZMHB); *Ciudad de Mexico*: Chapingo, 1 female, 24-VI-1961, (*F. Pacheco M.*); 1 female and 2 males, 31-VII-1962, (*Ray F. Smith*) (EMEC); Los Reyes, 3 females and 2 males, 02-VII-1953, (*E. E. Gilbert and C. D. MacNeil*) (EMEC); *Hidalgo*: Pachuca, 2 males, 23-VI-1937, (*Al mead*) (EMEC); *Puebla*: Puebla, 1 female and 1 male, V-1928, (*E. G. Smyth*) {cucurbit[aceae]} (EMEC).

New records: Mexico and Hidalgo (Mexico).

Distribution: Mexico (Guanajuato, Querétaro, Hidalgo, Michoacán, Mexico, Puebla, Oaxaca).

Isotes pollina (Bechyné & Bechyné, 1962) (Figure 29)

Diagnosis: integument black, except apex of clypeus, pronotum, elytra and base of femora light brown; frons longer than wide, clypeus with six setae near the basal margin, elongated genal area, eyes large, with a long seta at the inner margin; pronotum 1,6–1.7 times wider than long, with a transverse depression in the posterior half (closer to the posterior margin), reaching the sides, where it is evidently deeper.

Material examined: Brazil, *Rio Grande do Sul*: Derrubadas, Parque Estadual do Turvo, 1 female and 1 male, 21-X-2004, (*Luciano de A. Moura*); 2 females and 2 males, 29-X-2003, (*Luciano de A. Moura*); 1 female, 07-V-2004, (*I. Heydrich*); 1 female, 07-V-2004, (*R. Ott*) (MCZN).

Distribution: Brazil (Santa Catarina, Rio Grande do Sul).

Isotes puella (Baly, 1886) (Figures 30 and 31)

Diagnosis: integument pale to yellowish-brown, except antennomeres II-IX, apex of mandibles, scutellum, elytral disc, apex of femora, tibiae, tarsi and apex of urosternite V black; some specimens have all antennomeres black and

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Figures 29–43. 29: *Isotes pollina* (Bechyné and Bechyné). **30** and **31**: *I. puella* (Baly). **32**: *I. rubripennis* (Erichson). **33**: *I. sanguineipennis* (Baly). **34**: *I. semiflava* (Germar). **35**: *I. spilothorax* (Harold). **36**: *I. taeniolata* (Gahan). **37**: *I. ternata* (Bechyné and Bechyné). **38** and **39**: *I. tetraspilota* (Baly). **40**: *I. uniformis* (Jacoby). **41**: *I. valentina* (Bechyné). **42**: *I. varipes* (Boheman). **43:** *Isotes vittula* (Bowditch). Scale bars = 1 mm.

elytra with an oval spot at proximal half and a subpical pale stripe; frons longer than wide, clypeus with six setae near the basal margin, elongated genal area, eyes large, with a long seta at the inner margin; pronotum 1.6–1.7 times wider than long, with a transverse depression in the posterior half (closer to the posterior margin), reaching the sides, where it is evidently deeper.

Material examined: Costa Rica, *Heredia*: Estação Biologica La Selva, 1 female, 12-VIII-1996, (*INBio-OET*) (USNM); *San José*: Tecurrique [Tucurrique], 1, without date, (*Schild & Burgdorf*) (USNM); *Alajuela*: San Carlos, 1 female, without date, (*Schild & Burgdorf*) (USNM); Panama, *Panama* [*Canal Zone*]: without date, (*A. H. Jennings*) (USNM); Paraiso, Pan, 1 female, (*E. A. Schwarz*) (USNM); Chiriquí: Volcan, 2 females, without date, (Champion) (ZMHB); Colombia [Columb.], 4 females and 2 males, without date, (*Moritz.*) (ZMHB).

New records: Heredia, San José and Alajuela (Costa Rica); Chiriquí and Panama (Panama).

Distribution update: Panama is confirmed after the record provided by Gahan (1891).

Distribution: Nicaragua, Costa Rica (Alajuela, Heredia, Cartago, San José), Panama (Chiriquí, Panama), Colombia (Antioquia, Boyacá, Bolívar; unknown department: "Estern Colombia"), Venezuela.

Isotes rubripennis (Erichson, 1847) (Figure 32)

Diagnosis: integument dark brown to black, except elytra brownish-red; frons longer than wide, clypeus with six setae near the basal margin, elongated genal area, eyes small, with a long seta at the inner margin; pronotum 1.6–1.7 times wider than long, with two smooth oval depressions in the middle.

Material examined: Peru, 1 male, (*Thamm*); Mont., 1 male, (*Thamm*); 1 male, (*Philippi*) (ZMHB).

Type material: Lectotype male examined, deposited in ZMHB, with the following labels**:** 1) "Peru mont. Phil" [green, manuscript]; 2) "30836" [beige, print in black]; 3) "Diabrotica rubripennis Er.*" [beige, manuscript]; 4) "Lecto/ Type/ Smith 64" [red, manuscript, second line print in black].

Distribution: Peru (Junín; unknown region: Mont.).

Isotes sanguineipennis (Baly, 1891) (Figure 33)

Diagnosis: integument dark brown to black, except elytra brownish-red to brown; frons as long as wide, clypeus with six setae near the basal margin, elongated genal area, eyes small, with a long seta at the inner margin; pronotum 1.6 times wider than long, with two smooth oval depressions in the middle.

Material examined: Bolivia, *La Paz*: Sud Yungas, Incachaca, 1, X-1957, (*Dirings*) (MZSP).

New record: La Paz (Bolivia).

Distribution update: Bolivia is confirmed after the record by Bechyné and Bechyné (1970).

Distribution: Peru (Junín), Bolivia (La Paz, Cochabamba; unknown department: Yungas).

Isotes semiflava (Germar, 1824) (Figure 34)

Diagnosis: integument dark brown, except labrum, apex of mandibles, scape, prothorax, coxae, pro- and mesofemora, mesosternum, mesepisternum and mesepimerum light brown; elytra black with metallic blue; frons as long as wide, clypeus with six setae near the basal margin, elongated genal area, eyes small, with a long seta at the inner margin; pronotum 1.8–2.0 times wider than long, with a transverse depression in the posterior half (closer to the posterior margin), reaching the sides, where it is evidently deeper.

Material examined: Brazil, *Espírito Santo*: Santa Tereza, Reserva Santa Lúcia, 1, 02-IV-2011, (*Silveira, L., Dumas, L. and Nessimian, J.*) (DZRJ); *Rio de Janeiro*: Itatiaia, Maromba, 1 female, 26-XII-1953, (*Seabra and Alvarenga*) (MNRJ); Corcovado, 1 male, X-1957, (*Alvarenga and Seabra*) (MNRJ); Penedo, Serrinha do Alambari, 1, 12-VI-1986, (*A. M. B. Alves and E. Arcoverde*) (DZRJ); *São Paulo*: São Paulo, 2 females, without date, (*João Alves*) (MNRJ); Parque Água Funda, 1 male, III-1958, (*Dirings*); *Santa Catarina*: Timbó, 1 female, XI-1955, (*Dirings*) (MZSP); Seara, Nova Teutônia, 1 female, V-1935, (*Dirings*) (MZSP); *Rio Grande do Sul*: 2 females, 15-X-1939, (*Marcelino Ramos*) (MZSP).

Distribution update: Based on material examined and the literature, the distribution of *I. semiflava* (Germar) is restricted to central/eastern of South America, probably associated to Atlantic Rainforest biome, and Panama should be removed of distributional data of this species. The mistake assigned by Wilcox (1971) refers to *Diabrotica semiflava* Jacoby, 1887, species commonly found in Panama.

Distribution: Brazil (Mato Grosso, Espírito Santo, São Paulo, Rio de Janeiro, Paraná, Santa Catarina, Rio Grande do Sul), Argentina (Missiones).

Isotes spilothorax (Harold, 1875) (Figure 35)

Diagnosis: integument light brown, except head, antennae, pronotal spots, stripes of elytra abdomen and legs black; frons as long as wide, clypeus with 12 setae near the basal margin, labrum with 18 submedian long setae, elongated genal area, eyes small, with one long and three short setae at the inner margin, a row of setae in the outer margin; pronotum 1.6–2.0 times wider than long, with two smooth oval depressions in the middle.

Material examined: Brazil, *Rio de Janeiro*: Teresópolis, P. N. Serra dos Órgãos, 1 female, 20-VIII-1947, (*C. R. Hathaway*) (CEIOC); Petrópolis, 1 male, 03-I-1952, (*D. R. Bouth*) (CEIOC); *São Paulo*: Cantareira, 1, 15-I-1939, (*Nick*) (MZSP).

Distribution: Brazil (Minas Gerais, Espírito Santo, São Paulo, Rio de Janeiro).

Isotes taeniolata (Gahan, 1891) (Figure 36)

Diagnosis: integument brown, except antennomeres VIII-IX, base of femora, margin and longitudinal stripes of elytra pale-yellow; frons as long as wide, clypeus with eight setae near the basal margin, elongated genal area, eyes small, with a long setae at the inner margin; pronotum 1.8 times wider than long, with a transverse depression in the posterior half (closer to the posterior margin), reaching the sides, where it is evidently deeper.

Material examined: BRAZIL, *Amazonas*: São Paulo de Olivença, Alto Rio Amazonas, 1, I-1960, (*Dirings*) (MZSP).

Distribution update: Brazil is confirmed after the record provided by Bechyné and Bechyné (1969).

Distribution: Brazil (Amazonas), Peru (Huánuco, Junin).

Isotes ternata (Bechyné & Bechyné, 1961) (Figure 37)

Diagnosis: integument dark brown to black, except antennomeres VIII and IX, margins of pronotum and elytra, epipleura, coxae and basal half of femora yellowish-brown; frons as long as wide, short genal area, eyes large, with a long seta at the inner margin; pronotum 1.7–1.8 times wider than long, with a transverse depression in the posterior half (closer to the posterior margin), reaching the sides, where it is evidently deeper.

Type material: Alotype female examined, deposited in MZSP, with the following labels: 1, beige, manuscript: Ter. Amapá/ Rio Amapari/ J. Lane leg. // 2, beige, manuscript: 8.VII.59 // 3, beige, printed: Coleção J. Lane // 4, beige, manuscript: Allotype ♀ / Synbrotica ternata m./ printed: J. Bechyné det., 1960 (handwritten) // 5, red, printed: ALOTIPO.

Distribution: Brazil (Amapá).

Isotes tetraspilota (Baly, 1865) (Figures 38 and 39)

Diagnosis: integument yellowish-brown to reddish-brown, except antennomeres VIII–XI, apex of mandibles, two rounded spots on elytra black; frons wider than long, clypeus with eight setae near the basal margin, short genal area, eyes small, with a long setae at the inner margin; pronotum 1.6–1.7 times wider than long, without depression.

Material examined: MEXICO, 2 females and 2 males, without date, (*J. Flohr*) (ZMHB); 3 males, without date, (*Hoege S. and Kotze G.*); 1 female, 1906, (*Stobre*) (ZMHB); *Chiapas*: Tumbala, 4 females and 2 males (ZMHB); Santo Domingo, S. E. Simojovel, 2 males, 08–15-VII-1949, (*Ray F. Smith*); 2 females and 4 males, 8–15-VII-1949, (*J. A. Chemsak*) (EMEC); *Córdoba*: Fortin de las Flores, Sierra Zongolica [Sa Zongola], 1 female and 1 male, without additional data (ZMHB); *Veracruz*: Misantla, 2 males, (*Hoege*) (ZMHB); *Sonora*: Cordova, 2 females, (*Hoege*) (ZMHB); Jalapa, 3 females, (*Deppe*) (ZMHB); San Andrés Tuxtla, 1 male, XI.1944 (EMEC); W. Fortin de las Flores, 2 females, 06-VIII-1962 {*Cucurbita moschata* and *C. martinezi*} (EMEC); 2 females, 28-VIII-1962, (*Ray F. Smith*) (EMEC); GUATEMALA, *Guatemala*: San Cristobal, 2 females (ZMHB).

Distribution update: Belize, Guatemala, and Costa Rica are confirmed after records by Jacoby (1887) and Blackwelder (1946).

Distribution: Mexico (Sonora, Veracruz, Oaxaca, Chiapas), Belize (Toledo; unknown district: R. Hondo), Guatemala (Alta Verapaz, Baja Verapaz, Guatemala), Nicaragua (Chontales), Costa Rica (Cartago).

Note: The distribution of the type specimen of *Isotes quadrimaculata* Weise, 1922 reported from Manila (Philippines) was a mistake, as already cited by the species author.

Isotes uniformis (Jacoby, 1887) (Figure 40)

Diagnosis: integument yellowish-brown, except head, antennomeres IV–VII, sternites, scutellum and uroster-nites dark brown to black; frons as long as wide, clypeus with eight setae near the basal margin, short genal area, eyes small, with a long seta at the inner margin; males with longitudinal dorsal carina on antennomeres IV–X; pronotum 2.0 times wider than long, with a transverse depression in the posterior half (closer to the posterior margin), reaching the sides, where it is evidently deeper.

Material examined: COSTA RICA, *Cartago*: Turrialba, 1 male, [Inter-American Institute of Agricultural Sciences] (USNM); *San José*: Tecurrique, 1 female, (*Schild & Burgdorf*) (EMEC); PANAMA, *Chiriquí*: Boquete, 1 male, VIII-1939, (*J. R. Stewin*) (EMEC); Volcan, 1 female, (Champion) (USNM).

New records: Cartago and San José (Costa Rica).

Distribution: Nicaragua (Chontales), Costa Rica (Cartago, San José), Panama (Chiriquí).

Isotes valentina (Bechyné, 1956) (Figure 41)

Diagnosis: integument light brown, except scutellum, elytra, metasternum, apex of tibiae and tarsi brownish-black to black; frons as long as wide, clypeus with six setae near the basal margin, elongated genal area, eyes small, with a long setae and a row of short setae at the inner margin; pronotum 1.5–1.6 times wider than long, with a transverse depression in the posterior half (closer to the posterior margin), reaching the sides, where it is evidently deeper.

Material examined: BRAZIL, *Rio Grande do Sul*: Vila Oliva, 1 male, 05-II-1952; 1 female, 02-II-1950; 1 female, 18-II-1952; 1 male, 12-II-1948; 1 female, 18-II-1951; 1 female, 18-II-1948, (*P. Buck*) (MAPA).

Distribution: Brazil (Minas Gerais, Paraná, Santa Catarina, Rio Grande do Sul).

Isotes varipes (Boheman, 1859) (Figure 42)

Diagnosis: integument dark brown to black, except pronotum and base of femora light brown; frons as long as wide, clypeus with eight setae near the basal margin,

elongated genal area, eyes small, with a long seta at the inner margin; pronotum 1.5 times wider than long, with a transverse depression in the posterior half (closer to the posterior margin), reaching the sides, where it is evidently deeper.

Material examined: BRAZIL, *Mato Grosso*: Rondonópolis, XII-1950, (*Dirings*) (MZSP); Riacho Herval, Rio Paraná, 1, XII-1959, (*Dirings*) (MZSP); *Espírito Santo*: Córrego Itá, 1, XI-1956, (*W. Zikán*) (MNRJ); *Rio de Janeiro*: Tijuca, 1, IX-1932, (*R. Vosgien*) (MNRJ); Itacuruçá, 1, (*J. C. M. Carvalho*) (MNRJ); Santana, 1, XI-1932, (*Dario*) (MNRJ); *São Paulo*: Ilha Seca, 2, 19–26-II-1940, (*Com. Inst. Fiocruz*) (CEIOC).

New record: São Paulo (Brazil).

Distribution update: Colombia is confirmed after the record by Blackwelder (1946).

Distribution: Brazil (Mato Grosso, Goiás, Minas Gerais, Espírito Santo, São Paulo, Rio de Janeiro, Paraná), Colombia.

Isotes vittula (Bowditch, 1911) (Figure 43)

Diagnosis: integument yellowish-brown, except vertex, antennae, scutellum, apex of femora, tibiae and tarsi dark brown; elytra with margin and longitudinal stripe yellowish-brown; pronotum with a transverse depression in the posterior half (closer to the posterior margin), reaching the sides, where it is evidently deeper.

Material examined: GUATEMALA, *Escuintla*: Brito, 1 female, 19-XI-63, (*A. E. Michelbacher*) (EMEC).

New record: Escuintla (Guatemala).

Distribution: Guatemala (Escuintla), Peru (Lima).

These new records and detailed data improve the knowledge on the genus *Isotes*. All previous data were limited to the original descriptions of each species and Wilcox's catalogue (1972, 1975), with distributional information restricted to country level.

The new data includes eight new country records for 11 species and many new state or province records from five countries for 12 species (Table 1). The genus is also recorded from Belize for the first time.

The distribution of studied species is represented in Figure 43 by species density. Among the 14 countries represented, Brazil remains with the greatest diversity of species (18), followed by Peru (nine). Costa Rica is the third, with six species recorded, including three that are new to the country. The same is true for Guatemala and Bolivia, each with five species and three new records each. This study demonstrates once again the requirement to support taxonomic research programs aimed at understanding the biodiversity in mega-diverse countries.

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Figure 44. Map of Neotropical countries by species density of *Isotes* Weise.

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